calculating a strength of the additional magnetic field based on the detected temperature and the temperature dependence.

Please add new claims 14-31 as follows:

--14. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a homogeneous static magnetic filed in an inspection space;

a gradient magnetic field generating unit for generating a magnetic field strength gradient;

a high frequency magnetic field generating unit;

a detecting unit for detecting nuclear magnetic resonance signals generated from an object to be examined;

a display unit for displaying an image as an result based on the detection;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correcting unit based on the temperature detected by said temperature detecting unit.

15. (New) A magnetic resonance imaging apparatus according to claim 14, wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

16. (New) A magnetic resonance imaging apparatus according to claim 14, wherein the temperature detecting unit detects temperatures of at least two positions.

17. (New) A magnetic resonance imaging apparatus according to claim 14, wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

18. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

19. (New) A magnetic resonance imaging apparatus according to claim 14, wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

20. (New) A magnetic resonance imaging apparatus according to claim 14, wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

21. (New) A method for maintaining uniformity of a static magnetic field generated by a static magnetic field generating unit in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of non-uniformity of the static magnetic field in an inspection space for an object to be examined, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof; and

detecting a temperature of the static magnetic field generating unit and/or surroundings thereof; and

generating the additional magnetic field having a magnetic field distribution for correcting said nonuniformity of the static magnetic field based on the detected temperature.

22. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating means for generating a homogeneous static magnetic field in an inspection space; and

an uniformity correcting means for detecting temperature change affecting the uniformity of the static magnetic field generated by the static magnetic field generating means

and for generating an additional static magnetic field for canceling non-uniformity of the static magnetic field based on the detected temperature change.

23. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a static magnetic filed of a predetermined intensity, said static magnetic field generating unit comprising a pair of superconducting coils and a pair of cryostats each accommodating one of said pair of superconducting coils;

a supporting means for supporting said pair of cryostats as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating unit for generating a magnetic field having an intensity gradient;

means for generating a high frequency magnetic field;

means for detecting nuclear magnetic resonance signals generated from said object;

means for processing said nuclear magnetic resonance signals and for displaying the processed results;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correction unit based on the temperature detected by said temperature detecting unit.

24. (New) A magnetic resonance imaging apparatus according to claim 23, wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

25. (New) A magnetic resonance imaging apparatus according to claim 23, wherein the temperature detecting unit detects temperatures of at least two positions.

26. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

27. (New) A magnetic resonance imaging apparatus according to claim 23, wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

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28. (New) A magnetic resonance imaging apparatus according to claim 23, wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

29. (New) A magnetic resonance imaging apparatus according to claim 23, wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

30. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a static magnetic filed of a predetermined intensity, said static magnetic field generating unit including a pair of superconducting coils;

a supporting means for supporting said pair of superconducting coils as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating means for generating a magnetic field having an intensity gradient;

means for generating a high frequency magnetic field;

means for detecting nuclear magnetic resonance signals generated from said object;

means for processing said nuclear magnetic resonance signals and for displaying the processed results;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by deformation of said supporting means due to the temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correction unit based on the temperature detected by said temperature detecting unit.

31. (New) A magnetic resonance imaging apparatus according to any one of claims 1, 13, 14, 23 and 30;

wherein said apparatus further comprises means for calculating a temperature dependence of non-uniformity of the static magnetic field in the inspection space, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof;

means for holding a control data for correcting the non-uniformity of the static magnetic filed corresponding to the temperature; and

means for outputting the control data being selected from said control data holding means based on the detected temperature into said control unit.--

REMARKS

Claims 1-13 are rejected. The specification and claims 5 and 8 are herein amended to clarify the inventive concept using more proper wording. Namely, the terms "ununiform" and "ununiformity" have been replaced by "non-uniform" and "non-uniformity", respectively, throughout the specification. New claims 14-31 are herein added. Independent claims 14, 22, 23 and 30 are of variations in scope of claim 1 and dependent claims 15-20 and 24-29 correspond to dependent claims 2-7, respectively. Claim 21 is of a variation in scope corresponding to claims 8 and 9. No new matter has been introduced.

Claims 1-31 are in the case.

Claim for Foreign Priority under 37 C.F.R. § 1.55:

In the Office Action dated April 24, 2002, Claims 1-13 are rejected under 35 U.S.C. § 102(e) as allegedly anticipated by *Watkins et al.* (U.S. Patent 6,252,405 B1; "*Watkins*") which was filed November 15, 1999 and issued June 26, 2001. The filing date of *Watkins* falls between the foreign priority dates claimed by the Applicant for the present